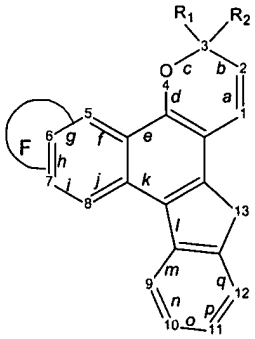
IN THE CLAIMS

Please amend the claims as follows:

1. (CURRENTLY AMENDED) A photochromic naphthopyran having a central nucleus of the formula:



wherein F is a ~~5-member, 6-member, or 7-member heterocyclic ring group having only one heteroatom, the heteroatom selected from the group consisting of oxygen, sulfur, and nitrogen, the 2,3 or 3,2 positions of the heterocyclic ring~~ dihydrofuran group fused to the *g*, *h*, or *i* side;

R_1 and R_2 are the atoms or groups providing photochromic properties to the naphthopyran.

2. The photochromic naphthopyran of claim 1 wherein R_1 and R_2 are selected from the group consisting of aliphatic groups, aromatic groups, and heterocyclic groups.

3. The photochromic naphthopyran of claim 1 wherein R_1 and R_2 are selected from the group consisting of alkyl groups, aromatic groups, and heterocyclic groups.

4. The photochromic naphthopyran of claim 1 wherein R_1 and R_2 are selected from alkyl groups, phenyl groups, and naphthyl groups.

5. (CANCELLED)

6. (CANCELLED)

7. (CANCELLED)

8. (CANCELLED)

9. (ORIGINAL) The photochromic naphthopyran of claim 1 wherein the 13-position has substituents R_3 and R_4, wherein R_3 and R_4 individually represent

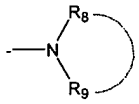
a hydrogen atom,

a hydroxy group,

a halogen atom,

a linear, branched, or cyclic C1-C6 alkyl, alkenyl, or alkynyl group,

a linear, branched, or cyclic C1-C6 alkoxy or alkenoxy group,



an amino group:

in which R_8 and R_9, which are the same or different, independently representing a hydrogen, a linear, branched, or cyclic alkyl group comprising 1 to 6 carbon atoms, an aryl or heteroaryl group, or representing (together with the nitrogen atom to which they are bound) a 5- to 7-membered ring which can comprise at least one other heteroatom selected from oxygen, sulfur and nitrogen, said nitrogen being optionally substituted with an R_{10} group, which is a linear or branched alkyl group comprising 1 to 6 carbon atoms, a phenyl, a benzyl, or a naphthyl,

an aryl or heteroaryl group selected from the group consisting of phenyl, naphthyl, phenanthryl, pyrenyl, quinolyl, isoquinolyl, benzofuranyl, thienyl, benzothienyl, dibenzofuranyl, dibenzothienyl, carbazolyl, indolyl,

a mono-substituted phenyl having a substituent at the para position that is a linking group, --$(CH_2)_t$ -- or --O--$(CH_2)_t$ --, wherein t is the integer 1, 2, 3, 4, 5 or 6, connected to an aryl group, which is a member of another photochromic naphthopyran,

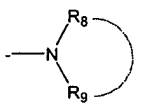
an aralkyl or heteroaralkyl group, the alkyl part of which is linear or branched, comprising 1 to 4 carbon atoms,

a --$C(O)R_{11}$, --$OC(O)R_{11}$, or $COOR_{11}$ group, wherein R_{11} is hydrogen, hydroxy, linear or branched C1-C6 alkyl, linear or branched C1-C6 alkoxy, phenyl, mono-substituted phenyl, naphthyl, mono-substituted naphthyl, amino, mono(C1-C6) alkylamino or di(C1-C6)alkylamino, e.g., N,N-dimethyl amino, N-methyl-N-propyl amino, morpholino, piperidino or pyrrolidyl, said amino substituents being selected from the group consisting of C1-C6 alkyl, phenyl, benzyl and naphthyl, and said benzyl and phenyl substituents being C1-C6 alkyl or C1-C6 alkoxy,

a group --OR_{12}, wherein R_{12} is a C1-C6 acyl, an aralkyl or heteroaralkyl group with a C1-C3 alkyl portion, a (C3-C7)cycloalkyl group, a (C2-C4)alkyl group, or R_{12} is the group, --$CH(R_{13})$ R_{14}, wherein R_{13} is hydrogen or C1-C3 alkyl and R_{14} is --CN, --CF_3, or --$COOR_{15}$, wherein R_{15} is hydrogen or linear, branched, or cyclic alkyl, aralkyl or heteroaralkyl,

a group --$CH(R_{16})_2$ wherein R_{16} is --CN or --$COOR_{15}$,

a group –$CH(R_{15})R_{17}$, wherein R_{17} is --$COOR_{11}$, --$C(O)R_{18}$ or --CH_2 OR_{19}, wherein R_{18} is hydrogen, linear, branched, or cyclo-alkyl, aryl groups, amino group of formula



R_{19} is hydrogen, --$C(O)R_{11}$, alkyl, alkoxyalkyl, phenylalkyl, mono-alkoxy substituted phenyl-alkyl, or aryl groups,

a polyether, polyamide, polycarbonate, polycarbamate, polyurea, polyester residue, or a group ended by a polymerizable residue;

or R_3 and R_4 may together form a 3- to 7-member spiro-cyclic ring which can comprise at least one heteroatom selected from oxygen, sulfur, and nitrogen.

10. (CURRENTLY AMENDED) The photochromic naphthopyran of claim 9 wherein,

(a) in the 5- and/or 8-position, a group R_6 is present wherein R_6 represents

a hydrogen,

a halogen, ~~and notably fluorine, chlorine or bromine,~~

a linear or branched alkyl group which comprises 1 to 12 carbon atoms ~~(advantageously 1 to 6 carbon atoms)~~,

a cycloalkyl group comprising 3 to 12 carbon atoms, a linear or branched alkoxy group comprising 1 to 12 carbon atoms ~~(most advantageously 1 to 6 carbon atoms)~~,

a haloalkyl, halocycloalkyl, or haloalkoxy group corresponding to the alkyl, cycloalkyl, alkoxy groups above respectively, which are substituted with at least one halogen atom, ~~notably selected from fluorine, chlorine and bromine,~~

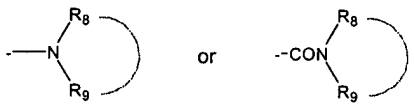
a linear or branched alkenyl or alkynyl group comprising 1-12 carbon atoms, ~~preferably a vinyl or allyl groups,~~

a linear or branched alkenoxy or alkynoxy group comprising 1-12 carbon atoms, ~~preferably an allyloxy group,~~

an aryl or heteroaryl group having the same definition as that given above for aryl or heteroaryl groups within the definitions of R_3, R_4,

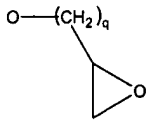
an aralkyl or heteroaralkyl group, the alkyl group, which is linear or branched, comprising 1 to 4 carbon atoms, and the aryl and heteroaryl groups having the same definitions as those given above for R_3, R_4,

an amine or amide group: $--NH_2$, $--NHR_8$, $--CONH_2$, $--CONHR_8$,



R_8, and R_9 having their respective definitions given for the amine substituents of the values R_3, R_4,

a $-C(R_{15})_2R_{11}$, $-OCOR_{15}$, or $-COOR_{15}$ group, wherein R_{11} and R_{15} are defined supra in R_3 and R_4,a methacryloyl group or an acryloyl group,



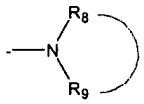
an epoxy group having the formula,

in which q = 1, 2 or 3,

a polyether, polyamide, polycarbonate, polycarbamate, polyurea or polyester residue, or a group with polymerizable residue,

(b) in the 9-, 10-, 11-,and 12-positions there are at most 4 R_5 groups, each being the same as R_6, defined hereinbefore; or

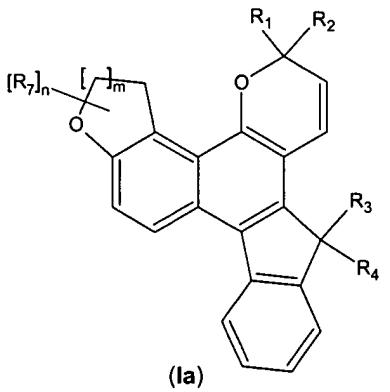
(c) two adjacent R_5 together form a 5- to 7-member aromatic or non-aromatic ring which can comprise at least one heteroatom selected from oxygen, sulfur, and nitrogen, and/or at least one substituent selected from the group consisting of a C1 to C6 alkyl group which is linear, branched, or cyclic, a C1 to C6 alkoxy group which is linear or branched, and an amine group of formula $-NH_2$, NHR_8, or



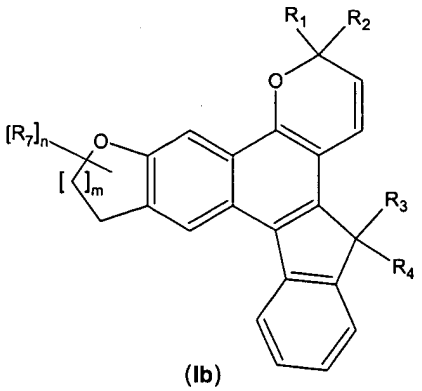
as defined in R_3 and R_4 for amine groups, said aromatic or non-aromatic ring can be optionally annelated with a benzene group.

11. (ORIGINAL) The photochromic naphthopyran of claim 10 wherein R_1 and/or R_2 represent a para-substituted phenyl group, said substituents on the para-substituted phenyl group selected from hydrogen, alkyl, alkoxy, dialkylamino, diarylamino, or R_1 and R_2 together form an adamantyl group or norbornyl group or anthracenylidene group;

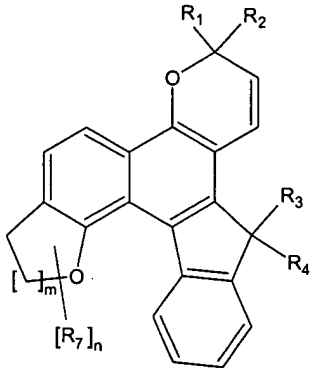
12. (ORIGINAL) The photochromic naphthopyran of claim 1 wherein the naphthopyran



(Ia)



(Ib)



(Ic)

has a formula selected from the group consisting of (Ia), (Ib), and (Ic) below, in which:

m is an integer 1 or 2,

R_1 and/or R_2, independently represent optionally substituted aryl or heteroaryl groups the basic structure of which is selected from phenyl, naphthyl, biphenyl, pyridyl, furyl, benzofuryl, dibenzofuryl, N--(C_1 -C_6)alkylcarbazole, thienyl, benzothienyl, dibenzothienyl, julolidinyl groups; R_1 and/or R_2 advantageously representing a para-substituted phenyl group, said substituents are selected from hydrogen, alkyl, alkoxy, dialkylamino, diarylamino, or R_1 and R_2 together form an adamantyl group or norbornyl group or anthracenylidene group;

R_3 and R_4 are the same or different, and may represent independently

a hydrogen, a hydroxy, a halogen,

a linear, branched, or cyclic alkyl group that comprises 1 to 6 carbon atoms,

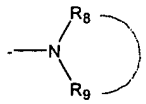
a $-OR_{20}$ group, wherein R_{20} is (C1-C3)alkyl, phenyl(C1-C3)alkyl, mono(C1-C3)alkylphenyl(C1-C3)alkyl, mono(C1-C3)alkoxyphenyl(C1-C3)alkyl, (C1-C3)alkoxy(C2-C4)alkyl, fluoro(C1-C3)alkyl, or chloro(C1-C3)alkyl,

an optionally substituted phenyl or benzyl group, said substituents being mono, di-, or tri-substituents, and selected from group R_{20},

a $-C(R_{21})_2X$ group, wherein X is hydroxy, alkoxy, benzoyloxy, C1-C6 acyloxy, an ester group: $-COOR_{11}$, an amine or amide group: $-NH_2$, $-NHR_8$, $-N(R_8)_2$, $-CONH_2$, $--CONHR_8$, $-CON(R_8)_2$, R_{21} is hydrogen, C1-C6 alkyl, phenyl or naphthyl with C1-C6 alkyl or C1-C6 alkoxy substituents,

a polyether or polyurea residue,

or R_3 and R_4 together form a 5- to 7-member optionally substituted spiro-cyclic ring which can comprise at least one heteroatom selected from oxygen, sulfur, and nitrogen, and/or at least one substituent selected from the group consisting of a C1 to C6 alkyl group which is linear or branched, a C1 to C6 alkoxy group which is linear or branched, and an amine group of formula $-NH_2$,



NHR_8,

the spiro-ring may be annelated with one or two benzene groups;

R_7, which are identical or different, represent, independently

a hydrogen,

a linear or branched alkyl group which comprises 1 to 6 carbon atoms,

a cycloalkyl group comprising 3 to 7 carbon atoms,

a linear or branched alkoxy group comprising 1 to 6 carbon atoms,

a haloalkyl, halocycloalkyl, or haloalkoxy group corresponding to the alkyl, cycloalkyl, alkoxy groups above respectively, which are substituted with at least one halogen atom,

a linear or branched alkenyl or alkynyl group comprising 1-12 carbon atoms,

a linear or branched alkenoxy or alkynoxy group comprising 1-12 carbon atoms,

n is an integer from 0 to 2.

13. (ORIGINAL) A photochromic article comprising a polymeric layer containing a photochromic amount of a photochromic naphthopyran according to claim 1.

14. (ORIGINAL) A photochromic article comprising a polymeric layer containing a photochromic amount of a photochromic naphthopyran according to claim 2.

15. (ORIGINAL) A photochromic article comprising a polymeric layer containing a photochromic amount of a photochromic naphthopyran according to claim 3.

16. (ORIGINAL) A photochromic article comprising a polymeric layer containing a photochromic amount of a photochromic naphthopyran according to claim 4.

17. (ORIGINAL) A photochromic article comprising a polymeric layer containing a photochromic amount of a photochromic naphthopyran according to claim 9.

18. (ORIGINAL) A photochromic article comprising a polymeric layer containing a photochromic amount of a photochromic naphthopyran according to claim 10.

19. (ORIGINAL) A photochromic article comprising a polymeric layer containing a photochromic amount of a photochromic naphthopyran according to claim 11.

20. (ORIGINAL) A photochromic article comprising a polymeric layer containing a photochromic amount of a photochromic naphthopyran according to claim 12.